Government-led monitoring of water, sanitation and hygiene service adaptation to climate change

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Introduction

In this paper, we argue that evaluating sustainable development of water, sanitation and hygiene (WASH) services must take into account the local, context-specific factors of climate change adaptation (CCA) and vulnerability. We further argue that government, especially local government, has an important role to play in this regard and the international community should emphasise supporting country monitoring and evaluation (M&E) systems that are appropriately designed for local contexts.

There appears to be wide consensus that the effects of climate change are undermining sustainable access to WASHservices, and will continue to over the coming decades (Howard et al., 2010; Oates et al., 2014; OHCHR, n.d.).Meanwhile, Pacific island countries (PICs) are regarded by some as being the most vulnerable nations in the world to climate change, with significant consequences for the sustainability of WASH services (Hadwen et al., 2015). To address this, PICs and the international development community have begun to focus attention on CCA activities that seek to develop WASH service sustainably in an era of climate change.

It has been argued that monitoring or "surveillance" systems are necessary to collect information at a local level that can be used to develop sensitivity to change (Barnett, 2001) and inform future CCA efforts (Howard et al., 2010).In recent years there has been rapidly increasing attention given toward M&E for CCA(Bours et al., 2014b), but it has largely focused on discrete policies and programs or on how adaptation takes place at a regional or global level (Ford and Berrang-Ford, 2015). There is considerably less literature on ongoing monitoring of climate change impacts and responses at a local level.

In the following sections, we firstdiscuss the sustainability dimensions of WASH services in the face of climate change and in a Pacific island context. We then make a case for why government, especially at a local level, has an important role to play in monitoring and evaluating the sustainability of WASH services in this context. Finally, we give an overview of local government structures in PICs and highlight the implications of this for supporting appropriately designed M&E systems.

Dimensions of WASH sustainability in Pacific islands

The Pacific island region comprises 22 countries and territories throughout the Pacific Ocean. In this paper we focus on the 14 PICs that are either independent nations or autonomous nations in free association with other

countries: Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Nauru, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

WASH services generally refer to the level of access and experience that individuals or groups of people have with a water supply, sanitation facility, and associated hygienic practices. The most common form of monitoring water and sanitation services is by counting the number of households that have access to a particular type of water or sanitation technology (Norman, 2013). Typically, the convention set by the Joint Monitoring Programme which classifies technologies into categories of "improved" or "unimproved" (i.e. generally safe to use or generally unsafe to use) (UNICEF and WHO, 2015) is followed. Hygiene services, which includes practices such as handwashing, maintaining latrine cleanliness, and managing water quality at a household level among many others, are usually monitored via self-reporting, proxy indicators, or direct observation (van der Voorden and Krukkert, 2015).

However, WASH services are much more than just the provision of technologies and other dimensions of sustainability must be considered.One such dimension is environmental sustainability which is primarily dependent on the volume and quality of water resources. Water resources throughout PICs are often stressed due to existing climactic variability and events, growing populations, poor water use efficiency, over-abstraction, and pollution from human activities such as oil leaks and spills, agricultural chemicals, and poorly designed sanitation systems(Falkland, 2011). Climate change exacerbates this stress in numerous ways including salinization of groundwater from rising sea levels and water scarcity during longer dry periods (Barnett, 2005).Thus, managing water resources is necessary to ensure the environmental sustainability of WASH services. Recommendations for achieving this are usually in the form of supply-side strategies such as diversifying and protecting water sources or demand-side strategies such as conservation and water-use efficiency (Falkland, 2011). Designing sanitation and water infrastructure to be more resilient to disasters has also been recommended (Howard et al., 2010).

Economic sustainability of WASH services is also detrimentally impacted by effects of climate change. Water and sanitation services incur costs over their entire lifecycles that must be paid for to continue their operation (Fonseca, 2015). Capital maintenance, large maintenance costs for renewal, rehabilitation, and replacement of system components, is usually the most difficult cost for households and communities to account for and frequently leads to dysfunctional services (Fonseca et al., 2013). Increased damage from extreme weather events that are intensifying under climate change in the Pacific region will add to capital maintenance costs for both communities and utilities. Further, many utilities in PICs currently do not collect sufficient revenue to cover their operating costs without the aid of government subsidies (PWWA, 2013). Pursuing water resource diversification and water-use efficiency strategies to improve climate resilience can incur further costs and economic strain on utilities. When implementing CCA strategies like these, the international community and PIC governments need to be keenly aware of whether the poorest can afford them and how users will pay for them; not just upfront, but also over the long-term.

Thirdly, social sustainability is critical to consider. It has been argued that societal factors such as ethics, knowledge, attitudes to risk, and culture are often more influential on successful CCA than any physical or ecological factor(Adger et al., 2009). For example, in Kiribati the success of a strategy to build climate change resilience into the water supplies of rural communities was limited because it conflicted with social and religious values of the communities (Kuruppu, 2009). Good governance and management of WASH services is equally important for their sustainability. It has long been recognised that communities require ongoing external support for managing their water supplies (Carter et al., 1999)and the need for this is increasing as climate change puts more stress on community-managed systems (WHO and DFID, 2009). Finally, social sustainability also means WASH services must be developed and maintained for all people. Climate change magnifies the uneven distribution of risk, so CCA initiatives should foremost seek to build up the resilience of groups that currently have disadvantaged access to water and sanitation (OHCHR, n.d.).

These sustainability dimensions give us some direction broadly about what to monitor for evaluating sustainable development in the context of WASH in PICs, but there are also questions of who will monitor them and how. In the following sections we make the case for supporting government-led monitoring, especially at a local level.

Government-led monitoring

In recent years there has been a growing push for developing government- or country-led M&E systems in developing countries (Hoey, 2015). There are a number of advantages to this over donor-led project-based M&E systems and in the contexts of WASH and CCA the need may be even more pertinent.

Government-led monitoring is often favoured because it is believed that if countries are in charge of M&E processes, findings will better reflect the information needs and values of country stakeholders rather than just those of donors (Segone, 2009). Other conventional reasons are so that countries can better demonstrate accountability to donors and taxpayers and to help create a culture of evidence-based decision-making (ibid). In the WASH sector, there is increasing emphasis on monitoring being led by local government because they are the ones often tasked with ensuring services are being delivered (Cairncross et al., 2010; Schouten and Smits, 2015).

In the context of climate change, there are additional advantages. First, not all CCA efforts are driven and funded by donors. PICs generally take the threat of climate change very seriously and have their own initiatives and information needs without the presence of NGOs and donors (Barnett and Campbell, 2010). Governments of PICs should be supported in developing M&E systems for their own endogenous purposes.

Next, adaptation is not a static outcome, but rather a continuous adjustment and the characteristics of vulnerability to climate change will change over long timeframes(Barnett et al., 2008; Bours et al., 2014a). Government is a permanent fixture, as opposed to time-bound bilateral and multilateral programs, and it is in a

better position to assess states of adaptation and vulnerability over long periods of time if monitoring mechanisms are institutionalised.

Finally, many authors emphasise that vulnerability to climate change is highly dependent on local socio-economic and ecological contexts (O'Brien et al., 2007; Preston et al., 2015; Smit and Wandel, 2006). Indeed, a community located on an atoll outer island will experience changes in climate much differently that a peri-urban community sited on a volcanic main island. Socio-economic factors and local ecosystems vary widely between diverse groups of people and places and can have acute implications for the ability of a community to adapt and how (Adger et al., 2003). What this entails is that a monitoring framework using generic indicators will likely have limited utility since the number of factors that could potentially influence adaptation are innumerable and their relative significance will vary across space and time (Barnett et al., 2008; Hinkel, 2011).

However, local government may be present at a small enough scale that they could monitor context-specific determinants of vulnerability. Further, many PICs have constitutional or statutory provisions for including traditional leadership in local government (Hassall and Tipu, 2008) which may give them intimate knowledge of local conditions. As mentioned previously, local government is often tasked with ensuring WASH services are being delivered so it makes sense that they should have context-specific information relating to service sustainability in the face of climate change.

Local government in Pacific island countries

M&E systems should fit the settings they are used in because systems that do not produce locally relevant information or over-stretch resources can inhibit diligent monitoring or overburden and demoralize responsible staff members (Hoey, 2015; Quin, 2010; Scott, 2012). Therefore, if M&E systems are to be built at a local government level in PICs, it is useful to have some understanding of their governance arrangements.

Almost all PICs have adopted decentralisation policies and several have constitutional provisions for local government (CLGF, 2013b). The scale that local government exists at in PICs varies widely and includes cities, town, villages, and islands (Hassall and Tipu, 2008). For example, in Solomon Islands the local government is currently only decentralised down to councils at the level of provinces and the capital city where they each oversee tens of thousands of people. Meanwhile, individual islands and island groups in Kiribati have their own island councils which may oversee as little as a few hundred people (CLGF, 2013a).Some of the larger Melanesian PICs have tiered national-regional-local government arrangements while all government is maintained centrally on micro-states like Niue and Nauru. The level of separation that exists between local government and central government and the public will have implications for the appropriateness of different forms of M&E.

There is also wide geographic variety in the populations that local governments oversee. In many PICs, such as Palau, Marshall Islands, and Nauru, the majority of the population lives in central urban areas. In others, such as Papua New Guinea and Vanuatu, a large majority is spread out across mountainous, rural areas. Issues of WASH service delivery differ between urban and rural settings, thus the focus of M&E in either setting needs to be adjusted accordingly.Some PICs consist of a single island while others include dozens spread out over millions of square kilometres(Duncan, 2011). Physical accessibility mediated by these population distributions is certainly impactful on the forms of M&E that can be feasibly carried out by local government in each country.

Traditional or customary governance systems that date back to pre-colonial times are often blended with democratic governance systems and empowered through legislation in PICs(Hassall et al., 2011). For example in Samoa, village councils composed of the heads of extended families are granted administrative power by the state. In Tuvalu, elected local officials are accountable to a traditional assembly of elders who are given power by the state to oversee local affairs (Sansom, 2013). These cases offer interesting opportunities for M&E at a local level because methods of inquiry could coalesce with traditional forms of engagement to produce rich, useful data that would otherwise be missed by generic technical measures.

For M&E systems to be effective at a local government level, they will need to be crafted appropriately to fit these heterogeneous local contexts while working within realities on the ground. It has been said that local government bodies in PICs generally are critically under-resourced and for the smallest islands this will likely continue to be the case for some time to come (Hassall and Tipu, 2008). In response to this, there have been numerous calls to increase the capacity of local government in PICs (CLGF, 2013c; Hassall, 2015; Sansom, 2013). Increased capacity would help to support M&E led by local government (Schouten and Smits, 2015), but as Hoey(2015) writes, the aid community "cannot simply encourage, demand, or offer more training in M&E, but must also think more critically about the form of M&E they advocate." Supporting M&E systems that are commensurate with the realities that local governments in PICs work under and that make best use of unique situations, such as formally recognised traditional governance systems, will be more effective than pushing a one-size-fits-all M&E framework.

Conclusions

Adapting WASH services to the effects of climate change in PICs is no small feat and the chances of this succeeding will be markedly improved if data on what influences vulnerability and sustainability of services are available. In this paper we have proposed that local government has the potential to collect important contextual data that would be useful for supporting CCA efforts if locally appropriate monitoring systems are supported. While this does not offer a panacea to the information needs for supporting appropriate CCA of WASH services, it does help to fill a gap that PICs can ill-afford to overlook. Climate change is undoubtedly having an impact on sustainable development in PICs and their evaluations could benefit greatly from local, indigenous perspectives.

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